

Large Hybrid Time-Varying Parameter VARs

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Abstract

Time-varying parameter VARs with stochastic volatility are routinely used for structural analysis and forecasting in settings involving a few macroeconomic variables. Applying these models to high-dimensional datasets has proved to be challenging due to intensive computations and over-parameterization concerns. We develop an efficient Bayesian shrinkage method for a class of models we call hybrid TVP-VARs—VARs with time-varying parameters in some equations but constant coefficients in others. Specifically, for each equation, the new method automatically decides (i) whether the VAR coefficients are constant or time-varying, and (ii) whether the error variance is constant or has a stochastic volatility specification. Using US datasets of various dimensions, we find evidence that the VAR coefficients and error variances in some, but not all, equations are time varying. These large hybrid TVP-VARs also forecast better than standard benchmarks.

Keywords: large Bayesian VAR, time-varying parameter, stochastic volatility, macroeconomic forecasting.

JEL classifications: C11, C52, C55, E37, E47.

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